

NEW THREATS and ANCIENT FOES

How Pests Threaten the Health of Children and the Public

The human toll of pest-borne disease is legendary. The notorious plague, carried by rat-borne fleas, wiped out a fourth of Europe twice in the Middle Ages. Today, more than 300 million adults and children worldwide still suffer the terrible misery of malaria, which is transmitted through mosquito bites.

Yet to most Americans, the risk of becoming seriously ill from a rodent or insect may seem antiquated or remote. But the fact is, across our cities, suburbs and rural areas – in our schools and playgrounds – pests sicken and injure millions every year and are especially dangerous to children:

- A public health official estimates that more than 45,000 people nationwide, including children, are bitten annually by rats, and countless more are exposed to the diseases they carry.^{1, 2}
- Cockroach allergens significantly drive up the rates of asthma among children.^{3, 4}
- Roaches, rats and mice soil and contaminate our food and food-preparation surfaces, leading to untold cases of food-borne disease.
- Primarily in the South, more than 1 million well-documented cases annually of painful fire ant stings drive thousands to seek medical treatment.⁵⁻⁹ Tragically, adults and children have died from allergic reactions to wasp and bee stings, and fire ant attacks.^{7, 10}



A More Crowded, Traveled World Heightens Health Risks

Recently, the emergence of West Nile virus grimly reminded us of the still deadly impacts of insect-borne disease. In 1999, seven New Yorkers died from West Nile virus, which is carried by mosquitoes. Until then, the disease did not exist in the United States. Yet in a few quick years, it has

spread to numerous states and the District of Columbia. Health experts predict that within a few years, West Nile virus will be nationwide.¹¹

Increased domestic and international travel, ever-denser living conditions, continued development and other factors are significantly raising the risk of injury and disease from our contact with pests. As stated in a recent report prepared by the U.S.

Department of Health and Human Services, Centers for Disease Control and Prevention:

*"We are a nation at risk. We face a world of new threats and ancient foes. As we enter the 21st century, the very air we breathe, water we drink and foods we eat are under new assault. Deadly diseases once conquered are becoming resistant to even our most advanced medicines. . . . In almost every state, public health workers can point to a recent event that confirms this fact. West Nile virus, encephalitis and other outbreaks are examples of how new diseases and their vectors have found their way onto our shores, joining old threats that have re-emerged in more virulent and drug-resistant forms . . ."*¹²

The well-respected National Academy of Sciences Institute of Medicine has defined the mission of public health as "fulfilling society's interest in assuring conditions in which people can be healthy."¹³ People should be healthy in schools, residences and places of work where the risk of exposure to pests that spread disease, cause injury or contaminate food is reduced to an absolute minimum.

Pest-Related Asthma Soars

There is mounting evidence that children are among those most acutely affected by diseases and injury caused by rats, mice, stinging insects and other pests. Children play outdoors and are exposed to numerous pests. They may also be less wary of these threats. Children's personal sanitation habits are not as well developed as adults, nor is their handling and disposal of food or other items that attract rats, mice, wasps and other insects.

Increasingly, scientists and physicians are learning more about the causal relationship between exposure to pests and asthma in children. For example:

- A study conducted by Johns Hopkins University and published in the Dec. 11, 2000, issue of the *Journal of Allergy and Clinical Immunology* cites mouse allergen as a significant contributing factor in the increased rate of childhood asthma.
- In a 1993 study, 476 children with asthma were recruited from eight inner-city areas in the United States. Data on morbidity due to asthma were collected during a one-year period. More than 36 percent of the asthmatic children reacted to cockroach allergen.⁴
- Between 1980 and 1994, the percentage of Americans with asthma increased by 75 percent, while the percentage of preschool children with asthma jumped 160 percent. Minorities and low-income populations have the highest asthma rate. In 1995, African-Americans were more than four times more likely than other groups to visit an emergency room because of asthma.¹⁴

Reference Notes

1. Walter J. Weber, *Diseases Transmitted by Rats and Mice*, Thomson Publications, Fresno, California, 1982.
2. Bobby Corrigan, "Mice Just as Important as Roaches in Allergy Studies," *Pest Control Technology Magazine Online*, GIE Media, Cleveland, Ohio, February 7, 2001.
3. Augusto A. Litonjua, Vincent J. Carey, Harriet A. Burge, Scott T. Weiss and Diane R. Gold, "Exposure to Cockroach Allergen in the Home is Associated with Incident Doctor-Diagnosed Asthma and Recurrent Wheezing," *Journal of Allergy and Clinical Immunology*, 107:41-47, 2001.
4. David L. Rosenstreich, Peyton Eggleston, Meyer Kattan and others, "The Role of Cockroach Allergy and Exposure to Cockroach Allergen in Causing Morbidity Among Inner-City Children with Asthma," *New England Journal of Medicine*, 336:1356-1360, 1997.
5. Robert E. Reisman, "Insect Stings," *New England Journal of Medicine*, 331:523-527, 1994.
6. H. M. Parrish, "Analysis of 460 Fatalities from Venomous Animals in the U.S.," *American Journal of Medical Sciences*, 245:129-145, 1963.
7. Richard D. deShazo, David F. Williams and Edward S. Moak, "Fire Ant Attacks on Residents in Health Care Facilities: A Report of Two Cases," *Annals of Internal Medicine*, 131:424-429, 1999.
8. Richard D. deShazo, Brian T. Butcher and W. A. Banks, "Reactions to the Stings of the Imported Fire Ant," *New England Journal of Medicine*, 323:462-466, 1999.
9. Richard D. deShazo and W. A. Banks, "Medical Consequences of Multiple Fire Ant Stings Occurring Indoors," *Journal of Allergy and Clinical Immunology*, 93: 847-850, 1994.
10. Arden L. Levy, Jeffrey M. Wagner and Stanley H. Schuman, "Fire Ant Anaphylaxis: Two Critical Cases in South Carolina," *Journal of Agromedicine*, 5:49-54, 1998.
11. Anita Manning, "West Nile fight Has Only Begun," *USA Today*, November 8, 2000, 11D.
12. "Public Health's Infrastructure, Every Health Department Fully Prepared, Every Community Better Protected, A Status Report," U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, March 2001.
13. "The Future of Public Health," Institute of Medicine, Committee for the Study of the Future of Public Health, Division of Health Care Services, National Academy Press, Washington, D.C., 1988.
14. "HHS Targets Efforts on Asthma," U.S. Department of Health and Human Services fact sheet, May 3, 2000.